

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)  
27 March 2000 (27.03.00)

International application No.  
PCT/NL99/00405

Applicant's or agent's file reference  
BO 42001

International filing date (day/month/year)  
30 June 1999 (30.06.99)

Priority date (day/month/year)  
30 June 1998 (30.06.98)

## Applicant

SMAK, Pieter, Wilhelmus, Johannes

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
25 January 2000 (25.01.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Claudio Borton

Telephone No.: (41-22) 338.83.38

09/120906  
5630

# PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

DE BRUIJN, Leendert, C.  
Nederlandsch Octrooibureau  
Scheveningseweg 82  
P.O. Box 29720  
NL-2502 LS The Hague  
PAYS-BAS

RECEIVED

AUG 17 2001

7 3600 MAIL ROOM

Date of mailing (day/month/year) 11 January 2001 (11.01.01)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference BO 42001	
International application No. PCT/NL99/00405	International filing date (day/month/year) 30 June 1999 (30.06.99)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

V.O.F. GEBR. SMAK & ZN.  
Grutteweide 7  
NL-1693 HR Wervershoof  
Netherlands

State of Nationality

NL

State of Residence

NL

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☒ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

HYDROPONICS HOLDING B.V.  
Grutteweide 7  
NL-1693 HR Wervershoof  
Netherlands

State of Nationality

NL

State of Residence

NL

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned  
☐ the International Searching Authority ☒ the elected Offices concerned  
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer R. Raissi Telephone No.: (41-22) 338.83.38
---	---

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Nederlandsch Octrooibureau	
INGEK	14 JAN 2000
Paraaf Bewerken	PCT

# PATENT COOPERATION TREATY

WO 00/00014  
PCT/NL99/00405

09/720906

From the INTERNATIONAL BUREAU

To:

DE BRUIJN, Leendert, C.  
Nederlandsch Octrooibureau  
Scheveningseweg 82  
P.O. Box 29720  
NL-2502 LS The Hague  
PAYS-BAS

## NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

Date of mailing (day/month/year) 06 January 2000 (06.01.00)		
Applicant's or agent's file reference BO 42001		IMPORTANT NOTICE
International application No. PCT/NL99/00405	International filing date (day/month/year) 30 June 1999 (30.06.99)	
Priority date (day/month/year) 30 June 1998 (30.06.98)		
Applicant V.O.F. GEBR. SMAK & ZN. et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
**AU,CN,EP,IL,JP,KP,KR,US**

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

**AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CU,CZ,DE,DK,EA,EE,ES,FI,GB,GD,GE,GH,GM,HR,  
HU,ID,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,  
SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW**

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
06 January 2000 (06.01.00) under No. WO 00/00014

### REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

### REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide

The International Bureau of WIPO 34, chemin des Colombettes 1211 Gen va 20, Switz rland	Authorized officer  J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

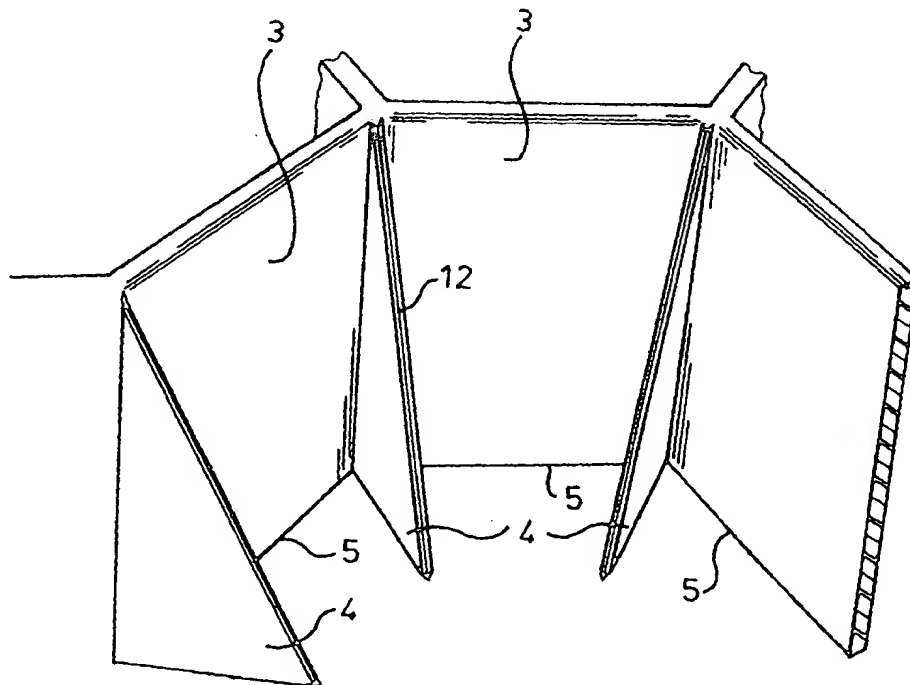


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>A01G 9/10</b>	<b>A2</b>	<b>(11) International Publication Number:</b> <b>WO 00/00014</b> <b>(43) International Publication Date:</b> 6 January 2000 (06.01.00)
<b>(21) International Application Number:</b> PCT/NL99/00405 <b>(22) International Filing Date:</b> 30 June 1999 (30.06.99) <b>(30) Priority Data:</b> 1009527 30 June 1998 (30.06.98) NL <b>(71) Applicant (for all designated States except US):</b> V.O.F. GEBR. SMAK & ZN. [NL/NL]; Grutteweide 7, NL-1693 HR Wervershoof (NL). <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> SMAK. Pieter, Wilhelmus, Johannes [NL/NL]; Grutteweide 7, NL-1693 HR Wervershoof (NL). <b>(74) Agent:</b> DE BRUIJN, Leendert, C.; Nederlandsch Octrooibureau, Scheveningseweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>In English translation (filed in Dutch).          Without international search report and to be republished upon receipt of that report.</i>

**(54) Title:** PLANT TRAY AND CULTIVATION SYSTEM PROVIDED WITH SUCH A PLANT TRAY**(57) Abstract**

Plant tray consisting of a plastic body in which a number of accommodations have been made. Viewed in the use position, said accommodations are open both at the bottom and at the top. The plant is inserted at the top and roots, which optionally can be brought into contact with water, are able to develop through the bottom. So as to be able to remove the plant easily and to prevent the roots growing together into a solid mass, it is proposed to construct the boundary of the opening at the bottom in the form of a cutting edge. Clamping means, such as plates extending into the accommodations, can be provided for clamping plants such as bulbs. These plates, and in particular the part that comes into contact with the bulbs, can be made sharp.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
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AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
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DK	Denmark	LK	Sri Lanka	SD	Sudan		
EE	Estonia	LR	Liberia	SE	Sweden		
				SG	Singapore		



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 99/00405

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A01G9/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A01G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 758 524 A (HOUNG CHONG LOUNG ;WANG CHING (TW)) 19 February 1997 (1997-02-19) cited in the application column 3, line 33 - line 55; figures 3,4 ---	1-4,6,11
A	FR 2 620 899 A (ALPES PROVENCE GAEC PEPINIERES) 31 March 1989 (1989-03-31) the whole document ---	1,2,6,11
A	DE 92 09 299 U (HERKUPLAST KUBERN GMBH) 17 September 1992 (1992-09-17) figures ---	1,2,6,11
A	EP 0 242 498 A (PETROVIC BRANISLAV) 28 October 1987 (1987-10-28) claim; figures ---	1,2,6,11
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

21 January 2000

Date of mailing of the international search report

27/01/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040. Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Merckx, A

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/NL 99/00405

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0758524	A	19-02-1997	NONE	
FR 2620899	A	31-03-1989	NONE	
DE 9209299	U	17-09-1992	AT 128807 T	15-10-1995
			CZ 9301368 A	16-02-1994
			DE 59300742 D	16-11-1995
			EP 0578153 A	12-01-1994
			ES 2079230 T	01-01-1996
			GR 3017797 T	31-01-1996
EP 0242498	A	28-10-1987	NONE	
EP 0195653	A	24-09-1986	AU 591102 B	30-11-1989
			AU 5492486 A	25-09-1986
			AT 78129 T	15-08-1992
			US 4763443 A	16-08-1988
EP 0565201	A	13-10-1993	NL 9200641 A	01-11-1993
			US 5379550 A	10-01-1995



fig - 1

1/2

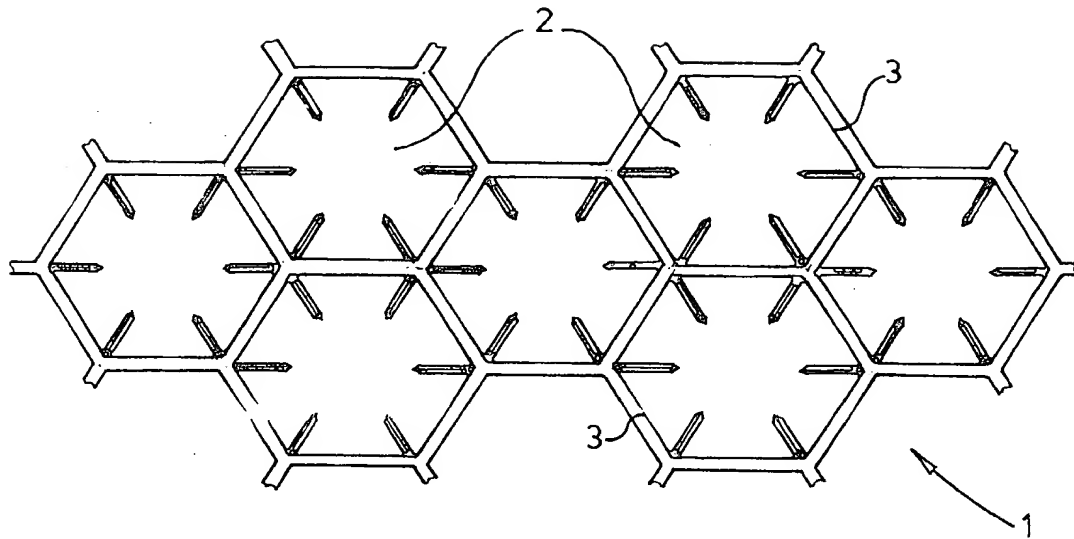
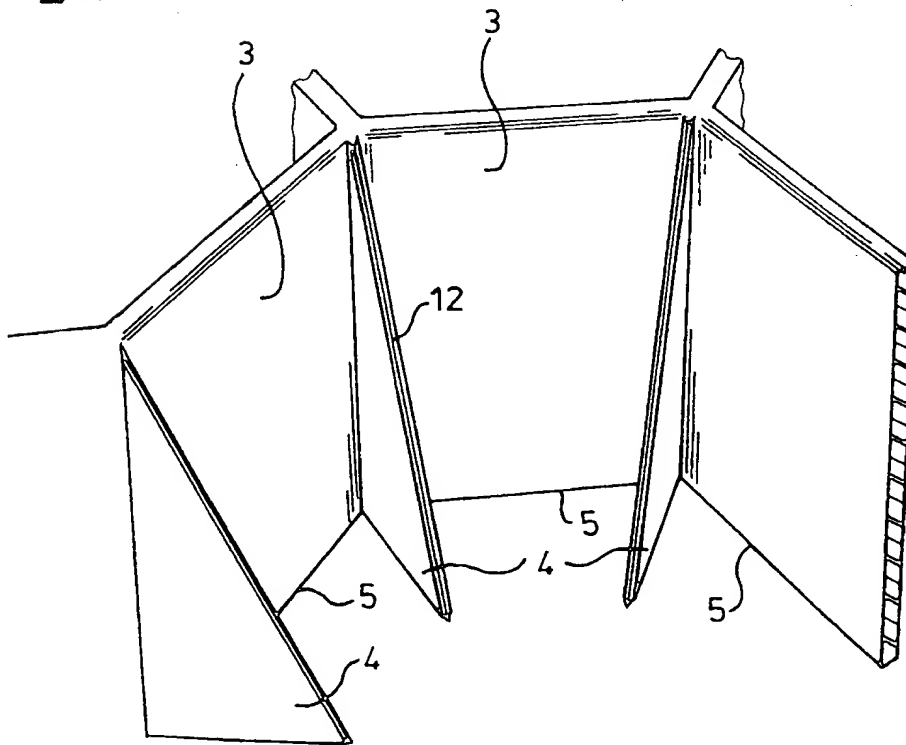


fig - 2



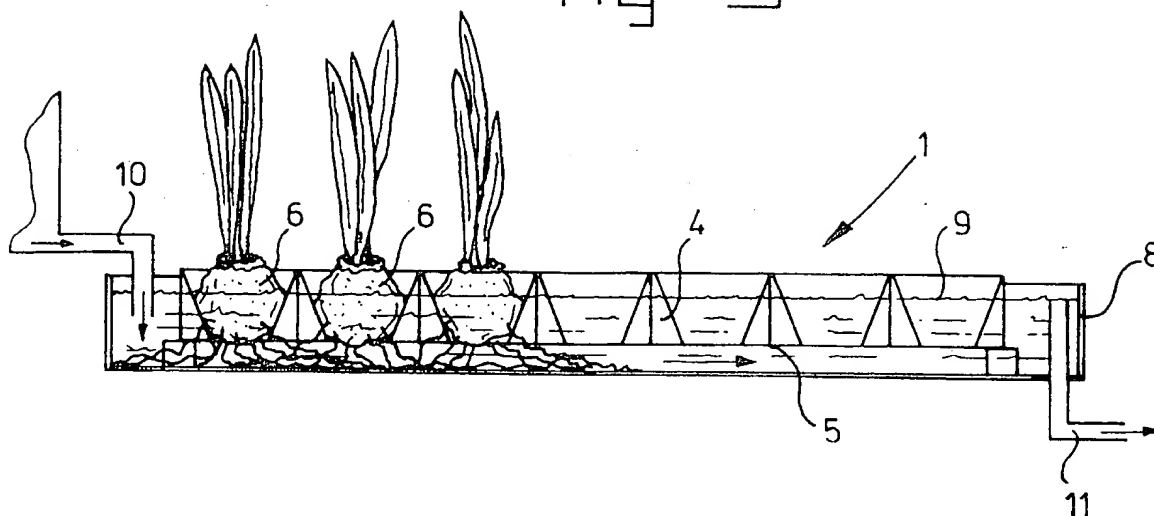
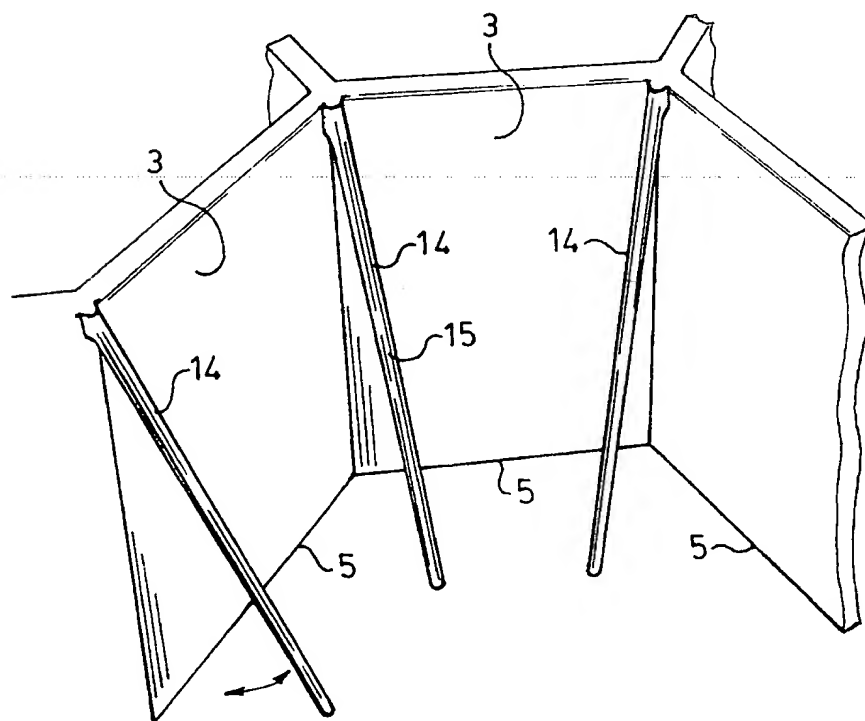
2/2  
fig - 3

fig - 4



# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>BO 42001</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/NL 99/ 00405</b>	International filing date (day/month/year) <b>30/06/1999</b>	(Earliest) Priority Date (day/month/year) <b>30/06/1998</b>
Applicant <b>V.O.F. Gebr. Smak &amp; Zn et, al</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

2

☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/NL 99/ 00405

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The abstract is modified as follows :

- line 1, 2 and 7 : after "accommodations" insert "(2)" .

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 99/00405

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A01G/10

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A01G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 758 524 A (HOUNG CHONG LOUNG ;WANG CHING (TW)) 19 February 1997 (1997-02-19) cited in the application column 3, line 33 - line 55; figures 3,4 ---	1-4,6,11
A	FR 2 620 899 A (ALPES PROVENCE GAEC PEPINIERES) 31 March 1989 (1989-03-31) the whole document ---	1,2,6,11
A	DE 92 09 299 U (HERKUPLAST KUBERN GMBH) 17 September 1992 (1992-09-17) figures ---	1,2,6,11
A	EP 0 242 498 A (PETROVIC BRANISLAV) 28 October 1987 (1987-10-28) claim; figures ---	1,2,6,11
	--- -/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## ° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

21 January 2000

Date of mailing of the international search report

27/01/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Merckx, A

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 99/00405

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 195 653 A (WILLIAMES HI TECH INT) 24 September 1986 (1986-09-24) figures ---	8
A	EP 0 565 201 A (CURTEC NEDERLAND BV) 13 October 1993 (1993-10-13) & NL 9 200 641 A cited in the application -----	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/NL 99/00405

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0758524	A	19-02-1997	NONE		
FR 2620899	A	31-03-1989	NONE		
DE 9209299	U	17-09-1992	AT	128807 T	15-10-1995
			CZ	9301368 A	16-02-1994
			DE	59300742 D	16-11-1995
			EP	0578153 A	12-01-1994
			ES	2079230 T	01-01-1996
			GR	3017797 T	31-01-1996
EP 0242498	A	28-10-1987	NONE		
EP 0195653	A	24-09-1986	AU	591102 B	30-11-1989
			AU	5492486 A	25-09-1986
			AT	78129 T	15-08-1992
			US	4763443 A	16-08-1988
EP 0565201	A	13-10-1993	NL	9200641 A	01-11-1993
			US	5379550 A	10-01-1995

## PATENT COOPERATION TREATY

## PCT

09 / 720906/6

REC'D 17 MAR 2000

PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BO 42001	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NL99/00405	International filing date (day/month/year) 30/06/1999	Priority date (day/month/year) 30/06/1998
International Patent Classification (IPC) or national classification and IPC A01G9/10		
Applicant V.O.F. GEBR. SMAK & ZN. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 25/01/2000	Date of completion of this report 15.03.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Bunn, D  Telephone No. +49 89 2399 2086 



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL99/00405

## I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

### Description, pages:

1-5 as originally filed

### Claims, No.:

1-13 as originally filed

### Drawings, sheets:

1/2-2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NL99/00405

---

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims 1-13
	No:	Claims
Inventive step (IS)	Yes:	Claims 1-13
	No:	Claims
Industrial applicability (IA)	Yes:	Claims 1-13
	No:	Claims

**2. Citations and explanations**

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**V. Reasoned statement**

1. EP-A-0 758 524 (D1) discloses a plant tray 100 comprising a plastic body with accommodations 110 open at the top 110a and bottom 110b, as in the preamble of claim 1. In this known tray, the walls 121, 122 delimiting said accommodations 110 increase in width towards the bottom end 110b (col.3, l.56-59). The tray of claim 1 thus differs from that of D1 in that the bottom opening is delimited by a cutting edge 5 acting in the direction in which the plant is removed from the accommodation.

There being no teaching in the available prior art for this differentiating feature, it follows that the subject matter of claim 1, as far as it is understandable in view of the clarity objections (see section VIII below), meets the requirements of Article 33 PCT.

2. Claim 12 relates to a cultivation system comprising the plant tray of claim 1, and so also meets the requirements of Article 33 PCT.
3. Claims 2-11 & 13 depend from claims 1 & 12 respectively, and so are likewise allowable.

**VIII. Certain observations**

1. Claim 1 fails to meet the requirements of Article 6 PCT with regard to clarity. The wording "a cutting edge (5) acting in the direction in which the plant is removed from the accommodation" appears incorrect, as said cutting edge in fact appears to act in a direction opposite to that in which the plant is removed from the accommodation (see p.4, l.8-12 & fig.3).

Moreover, the matter for which protection is sought is not clearly defined in that said wording "a cutting edge (5) acting in the direction..." attempts to define the subject-matter in terms of the result to be achieved, without specifying the technical features necessary for achieving said result.

09/720906

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29. 06. 99

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

PCT/NL 99 / 00405

International Application No.

30 JUN 1999

International Filing Date

(30. 06. 99)

BUREAU VOOR DE INDUSTRIËLE EIGENDOM  
P.C.T. INTERNATIONAL APPLICATION  
Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) BO 42001

<b>Box No. I</b>	<b>TITLE OF INVENTION</b>		Plant tray cultivation system provided with such a plant tray	
<b>Box No. II</b>	<b>APPLICANT</b>			
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)  V.O.F. Gebr. Smak & Zn. Gruteweide 7 NL-1693 HR Wervershoof The Netherlands			<input type="checkbox"/> This person is also inventor.  Telephone No.  Facsimile No.  Teleprinter No.	
State (that is, country) of nationality: The Netherlands (NL)			State (that is, country) of residence: The Netherlands (NL)	
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box				
<b>Box No. III</b>	<b>FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)</b>			
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)  SMAK, Pieter Wilhelmus Johannes Gruteweide 7 NL-1693 HR Wervershoof The Netherlands			This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.)	
State (that is, country) of nationality: The Netherlands (NL)			State (that is, country) of residence: The Netherlands (NL)	
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box				
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.				
<b>Box No. IV</b>	<b>AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE</b>			
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative				
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)  DE BRUIJN, Leendert C. et al Nederlandsch Octrooibureau Scheveningseweg 82, P.O. Box 29720 NL-2502 LS The Hague THE NETHERLANDS			Telephone No. 70 3527500  Facsimile No. 70 3527528  Teleprinter No.	
<input type="checkbox"/> Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.				

**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

**Regional Patent**

- ☒ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) .....

**National Patent (if other kind of protection or treatment desired, specify on dotted line):**

- |   |   |
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| <input checked="" type="checkbox"/> <b>AL</b> Albania .....                               | <input checked="" type="checkbox"/> <b>LS</b> Lesotho .....                                   |
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| <input checked="" type="checkbox"/> <b>BB</b> Barbados .....                              | <input checked="" type="checkbox"/> <b>MK</b> The former Yugoslav Republic of Macedonia ..... |
| <input checked="" type="checkbox"/> <b>BG</b> Bulgaria .....                              | <input checked="" type="checkbox"/> <b>MN</b> Mongolia .....                                  |
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| <input checked="" type="checkbox"/> <b>DE</b> Germany .....                               | <input checked="" type="checkbox"/> <b>RU</b> Russian Federation .....                        |
| <input checked="" type="checkbox"/> <b>DK</b> Denmark .....                               | <input checked="" type="checkbox"/> <b>SD</b> Sudan .....                                     |
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| <input checked="" type="checkbox"/> <b>ID</b> Indonesia .....                             | <input checked="" type="checkbox"/> <b>UG</b> Uganda .....                                    |
| <input checked="" type="checkbox"/> <b>IL</b> Israel .....                                | <input checked="" type="checkbox"/> <b>US</b> United States of America .....                  |
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| <input checked="" type="checkbox"/> <b>KG</b> Kyrgyzstan .....                            |   |
| <input checked="" type="checkbox"/> <b>KP</b> Democratic People's Republic of Korea ..... |   |
| <input checked="" type="checkbox"/> <b>KR</b> Republic of Korea .....                     |   |
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Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) (30.06.98) 30 June 1998	1009527	(NL) The Netherlands		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): 1

\* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

### Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / EPO

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

2 March 1999

SN 31375 NL

The Netherlands

### Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3

description (excluding sequence listing part) : 5

claims : 231

abstract : 1

drawings : 2

sequence listing part of description : 231

Total number of sheets : 231

This international application is accompanied by the item(s) marked below:

- ☒ fee calculation sheet
- ☒ separate signed power of attorney
- ☐ copy of general power of attorney; reference number, if any:
- ☐ statement explaining lack of signature
- ☐ priority document(s) identified in Box No. VI as item(s):
- ☐ translation of international application into (language):
- ☐ separate indications concerning deposited microorganism or other biological material
- ☐ nucleotide and/or amino acid sequence listing in computer readable form
- ☒ other (specify): Copy search report

Figure of the drawings which should accompany the abstract:

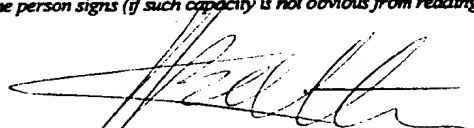
2

Language of filing of the international application:

English

### Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).



BORTELMA, Hans J.

Nederlandsch Octrooibureau, The Hague, 30 juni 1999

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1. Date of actual receipt of the purported international application:	30 JUN 1999 (30.06.99)	
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

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Date of receipt of the record copy by the International Bureau:	20 JULY 1999 (20.07.99)

fig - 1

1/2

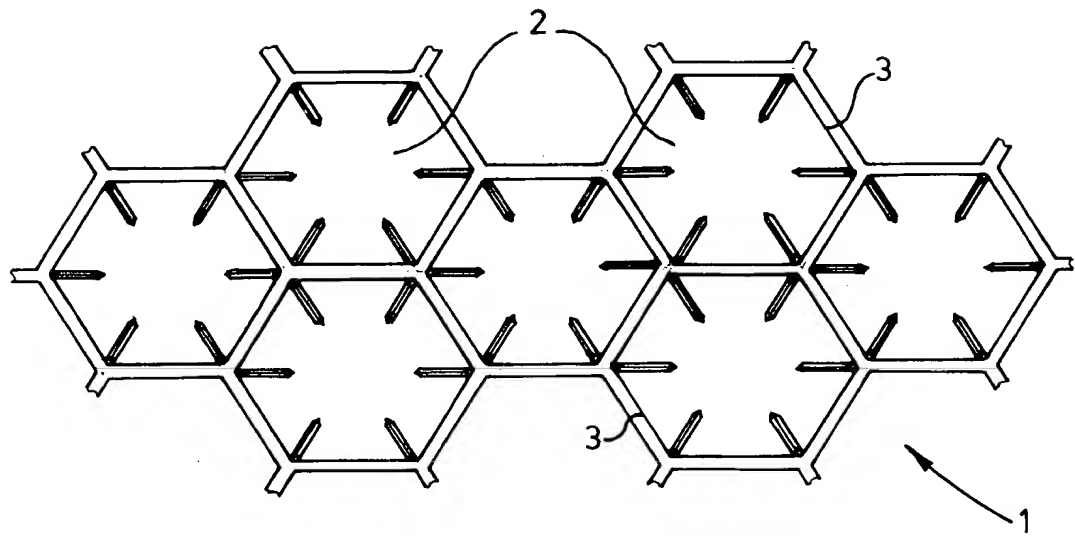
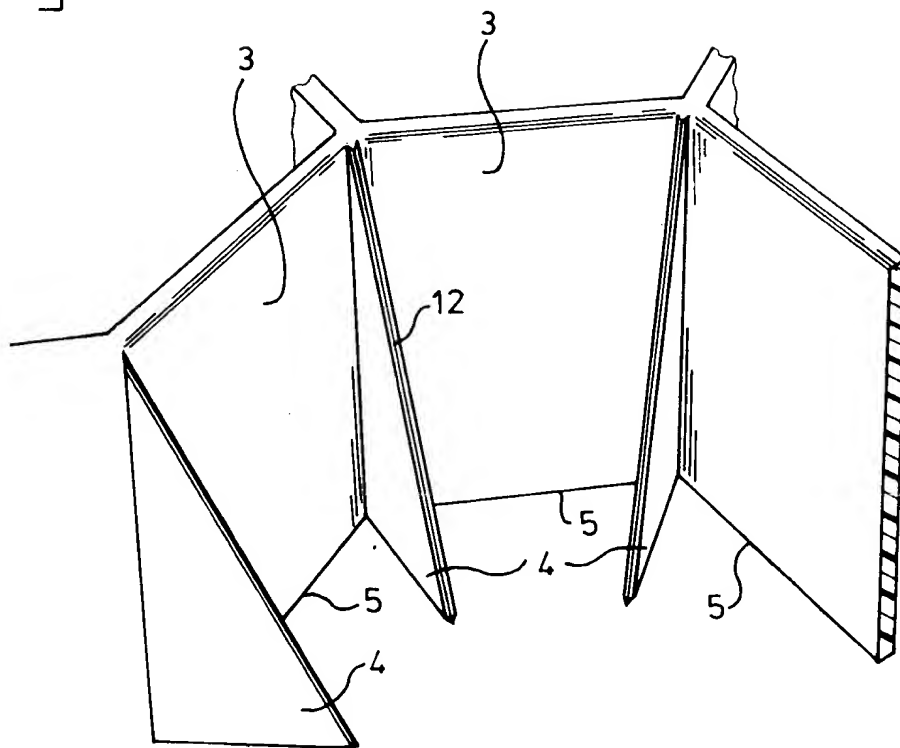


fig - 2



2/2  
fig - 3

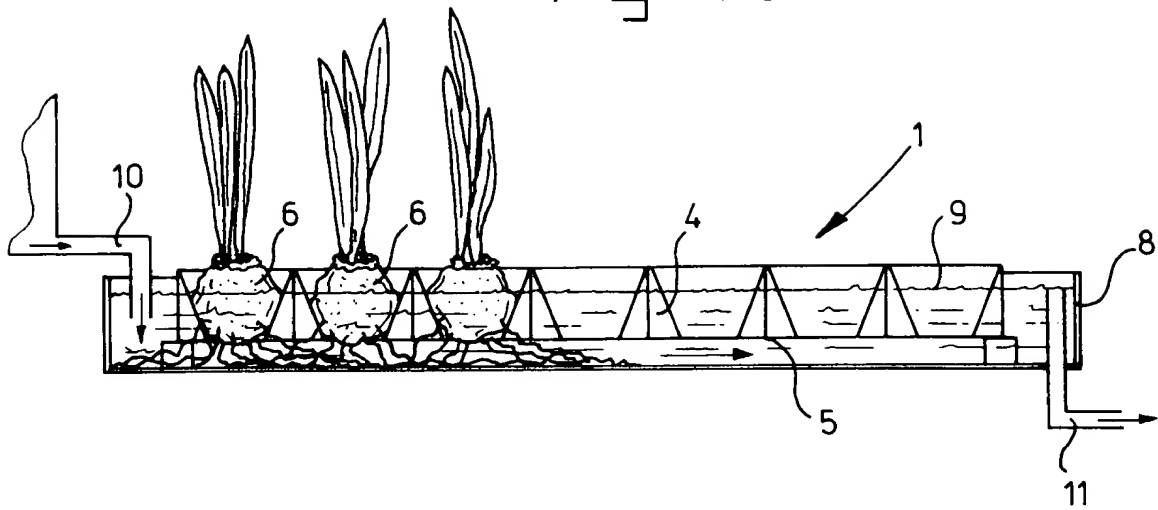
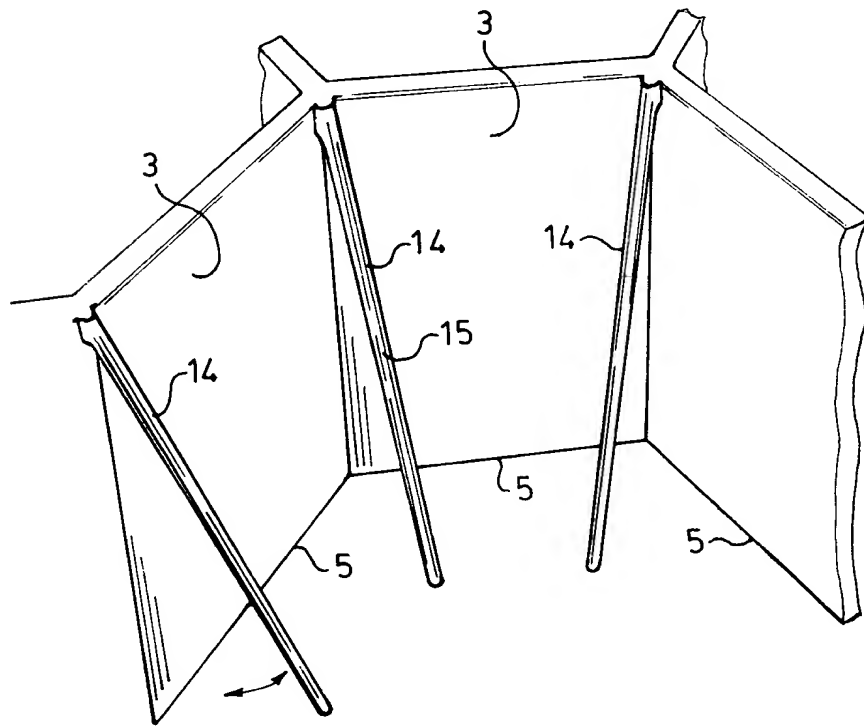


fig - 4





Gewas-tray alsmede teeltsysteem voorzien van  
een dergelijke gewas-tray.

De onderhavige uitvinding heeft betrekking op een gewas-tray volgens de aanhef  
5 van conclusie 1.

Een dergelijke gewas-tray is bekend uit EP 0 758 524 A1. Tulpenbollen, maar  
ook andere gewassen, worden in dergelijke trays opgeteeld.

In de Nederlandse terinzagelegging 9200641 wordt een gewas-tray beschreven  
waarbij de onderzijde van elk van de opnames gesloten is. Bollen worden in deze  
10 opnames geplaatst door aan de bovenzijde aangebrachte inbrenghopeningen en vervolgens  
wordt water toegevoerd. Dit water verzamelt zich aan de onderzijde en wortelgroei treedt  
daar op. Omdat dit water niet circuleert, ontstaat slijmvorming hetgeen nadelig is voor de  
verdere ontwikkeling van de bol en bovendien stank en rotten veroorzaakt.

Volgens een alternatief wordt in een tray voorzien bestaande uit een in hoofdzaak  
15 open bak met een bodemoppervlak vanwaaraf zich een aantal spijkers of naalden  
uitstrekt waarop de betreffende bollen gestoken worden. Er bestaan dus geen  
begrenzungen tussen de bollen. Door een dergelijke bak wordt water continu of  
intermitterend getransporteerd waardoor het probleem van verslijming, stank en rotten  
weggenomen wordt. De bollen zijn vrij aan elkaar grenzend aangebracht en gebleken is  
20 dat door aanzienlijke wortelvorming en uitbreiding de bollen niet meer te verwijderen  
zijn als afzonderlijke delen omdat de wortels van aangrenzende bolgewassen aanzienlijk  
met elkaar verstrengeld raken. Dit laatste systeem wordt met name gebruikt voor het  
gedurende lange tijd kweken, bijvoorbeeld 10 weken. Gedurende een dergelijke lange  
tijd kan de wortelontwikkeling aanzienlijk zijn. Het is wezenlijk dat de pennen zich niet  
25 door de wortelbodem uitstrekken omdat dan onherstelbare schade aan het gewas ontstaat.  
In praktijk is gebleken dat dit in bijzondere gevallen wel voorkomt.

Volgens andere teeltsystemen wordt gedurende korte tijd het gewas opgeteeld.  
Hoewel het hierboven beschreven systeem van wortelvorming in aanzienlijke mate  
beperkt wordt, wordt het niet geheel weggenomen. Bovendien betekent dit dat het gewas  
30 langer droog bewaard wordt, waardoor de kwaliteit mogelijkerwijs achteruit gaat.  
Bovendien is het kweken van dergelijke gewassen seizoensafhankelijk en indien twee  
weken voor de oogst het gewas nog verplaatst moet worden ontstaan grote pieken in de  
werkverdeling hetgeen niet gewenst is.

De constructie beschreven in EP-0758 524 A1 omvat vierkante opnames welke elke halverwege de begrenzinswanden steeds voorzien zijn van vingerachtige vasthoudorganen . Aan de onderzijde is elke tray open.

5 Het is het doel van de onderhavige uitvinding in een gewas-tray te voorzien waarbij verslijming van het water waarin de wortels staan voorkomen wordt, waarbij uitgesloten wordt dat gewassen niet meer te verwijderen zijn doordat de wortels van aangrenzende gewassen onderling vergroeien en waarmee het mogelijk is zowel een lange kweek (bijvoorbeeld 10 weken) als een korte kweek (bijvoorbeeld 2 weken) uit te voeren.

10 Dit doel wordt bij een hierboven beschreven gewas-tray verwezenlijkt met de kenmerkende eigenschappen van conclusie 1. Doordat de opnames aan de onderzijde uitkomen in een opening kan een voor de verschillende opnames gemeenschappelijk systeem onder de tray verwezenlijkt worden voor de toevoer en afvoer van water waardoor verslijming niet langer te vrezen valt. Zeker bij lange kweek zal een  
15 aanzienlijke wortelvorming ontstaan en zullen mogelijkerwijs de wortels van aangrenzende gewassen vergroeien. Door de aanwezigheid van een snijrand wordt bij het terugtrekken van de bol uit de opnames automatisch het zachte wortelmateriaal losgesneden en worden geen aangrenzende bolgewassen meegenomen.

20 Stabiele positionering van de bolgewassen in de opnames kan bevorderd worden door het aanbrengen van klemmiddelen. In de stand der techniek zijn allerlei soorten klemmiddelen voorgesteld. Volgens een van voordeel zijnde uitvoering van de uitvinding bestaan deze klemmiddelen echter uit schotten die zich bij voorkeur loodrecht op de omtrek van de opnames uitstrekken en een taps toelopende opening voor een dergelijk bolgewas begrenzen. Dat wil zeggen, het bolgewas kan stevig vastgedrukt worden in de  
25 klemmiddelen. Tijdens de verdere groei is geen beschadiging van de bollen waargenomen zoals wel geconstateerd is bij systemen waarbij de wortels op pennen en dergelijke gespietst worden. De bevestiging van de bollen wordt vergemakkelijkt indien dergelijke schotten van een scherpe snijrand voorzien zijn. Daardoor wordt weliswaar de  
30 de bolbodem plaats. Beschadiging van de rok heeft minder consequenties dan beschadiging van de bolbodem. in gevallen waarin beschadiging wel een negatief effect heeft, kunnen de randen van de schotten afgerond uitgevoerd zijn. bovendien is het mogelijk de schotten slechts aan de boven- of onderzijde van de tray te bevestigen

waardoor deze verend heen en weer kunnen bewegen. Bovendien kunnen middelen aanwezig zijn om de diepte waarmee de bollen ingebracht moet worden over de schotten vast te leggen zodat alle bollen even hoog staan.

Volgens een verdere van voordeel zijnde uitvoering van de uitvinding zijn de opnames zeshoekig, en volgens een honingraatpatroon aangebracht, uitgevoerd. Gebleken is dat op deze wijze optimale benutting van het oppervlak van de tray verkregen wordt. Bij een dergelijke uitvoering strekken de klemschotten zich bij voorkeur vanaf een of meer van de hoeken van de zeshoeken uit.

De wanddikte van de trays en meer in het bijzonder nabij de snijrand ligt bij voorkeur tussen 0,5 en 2,5 mm. Op deze wijze wordt voldoende sterkte met het vermogen tot het snijden van het verhoudingsgewijs zachte wortelmateriaal gecombineerd. De eigenlijke snijrand van de schotten is bij voorkeur dunner uitgevoerd en ligt onder 2,5 mm.

Zoals hierboven aangegeven heeft de uitvinding niet uitsluitend betrekking op tulpenbollen maar kunnen ook andere gewassen zoals hyacinten en narcissen daarmee geteeld worden.

De hierboven beschreven gewas-tray wordt bij voorkeur in combinatie met een teeltsysteem toegepast waarbij ervoor gezorgd wordt dat de wortels van de bollen in contact met water komen. Dit betekent dat afhankelijk van de diepte waarmee de bollen in de trays gedrukt worden een waterniveau gekozen moet worden. Bij voorkeur wordt een en ander zodanig uitgevoerd dat de tray in een houder geplaatst wordt waarin water gebracht wordt welk water continu of periodiek circuleert. Eventueel kan een eb/vloed-systeem toegepast worden.

De uitvinding zal hieronder nader aan de hand van een in de tekening afgebeeld uitvoeringsvoorbeeld verduidelijkt worden. Daarbij tonen:

Fig. 1 in bovenaanzicht een tray volgens de uitvinding;

Fig. 2 een detail van de tray volgens fig. 1 in zij aanzicht en gedeeltelijk opengewerkt; en

Fig. 3 een dwarsdoorsnede volgens de lijn 3-3 in fig. 1 in combinatie met een teeltsysteem en

fig. 4 schematisch in dwarsdoorsnede en alternatieve wijze van klemmen van het bolgewas.

In fig. 1 is een tray voor het telen van tulpenbollen in bovenaanzicht weergegeven.

Deze tray is aangegeven met 1. De afmetingen van deze tray zijn ongeveer 60 x 40 cm, maar begrepen moet worden dat een dergelijke afmeting niet van essentieel belang is voor de uitvindingsgedachte. Daarin zijn bijvoorbeeld 90-150 opnames aangebracht voor het bevatten van tulpenbollen. Bij andere gewassen zal dit aantal anders zijn.

5 De opnames zijn weergegeven met verwijzingscijfer 2 en zijn zeskantig waarbij de wanden met 3 aangegeven zijn. In fig. 2 is een opname in detail getoond en het blijkt dat deze behalve omtrekswanden 3 eveneens voorzien is van klemschotten 4 die schuin naar beneden hellend uitgevoerd zijn. De onderranden van de opnames 2 zijn met 5 aangegeven. De klemschotten 4 zijn voorzien van snijranden 12 en deze zijn  
10 verhoudingsgewijs scherp uitgevoerd.

In fig. 3 is combinatie van trays 1 met een eb/vloed-systeem weergegeven. Dit bestaat uit een vloeistofdichte bak voorzien van een watertoevoer 10 en waterafvoer 11 waarbij het momentane waterniveau met 9 aangegeven is. De tray en/of de houders zijn voorzien van afstandsmiddelen. Het gewas is met 6 aangegeven en uit de tekening blijkt  
15 dat de wortels daarvan zich in het water 9 bevinden. Daardoor kan optimale groei van het gewas bereikt worden. Door het regelmatig of continu circuleren van water 9 wordt slijmvorming en rotten voorkomen. Eventueel kunnen aan het water gewasbeschermingsmiddelen, meststoffen en dergelijke toegevoerd worden.

Zoals uit fig. 3 blijkt zullen, zeker indien een langere teelt van een aantal weken  
20 gebruikt wordt, de wortels van aan elkaar grenzende gewassen 6 met elkaar verknoopt raken. Onder normale omstandigheden zou dit het verwijderen van het gewas 6 uit de betreffende opname 2 belemmeren. Door de aanwezigheid van snijranden 5 kan echter het verhoudingsgewijs zachte wortelweefsel bij het opleggen van trek op gewassen 6 eenvoudig doorgesneden worden. Omdat dit wortelweefsel verhoudingsgewijs zacht is,  
25 worden aan de "scherpte" van snijrand 5 niet al te hoge eisen gesteld en een dergelijke snijrand is eenvoudig direct door spuitgieten met een gebruikelijke afronding te verwezenlijken.

Het gewas en meer in het bijzonder de bol daarvan wordt ingeklemd tussen de klemschotten of klemwanden 4. Daardoor wordt enerzijds ernstige beschadiging  
30 voorkomen en anderzijds voldoende fixatie gewaarborgd zodat transport en verdere handelingen met de tray mogelijk zijn. De met 12 aangegeven snijrand is in het bijzonder scherp uitgevoerd, zodat eenvoudig vastklemmen verwezenlijkt wordt en mogelijke beschadiging tot een zeer klein gebied beperkt wordt. Mogelijkerwijs zijn de klembanden

getrapt of op andere wijze uitgevoerd om in een hoogteaanslag voor de bollen te voorzien.

In fig. 4 is een variant van de tray volgens de uitvinding afgebeeld. de met fig. 1-3 overeenkomende delen zijn van dezelfde verwijzingscijfers voorzien. de klemschotten zijn in deze uitvoering aangegeven met 14 en bestaan uit slechts aan de bovenzijde van wanden 3 bevestigde stroken materiaal. door deze wijze van bevestiging kan het gewas op verende wijze ingeklemd worden. in een dergelijk geval is het niet noodzakelijk de met 15 aangegeven rand scherp uit te voeren. deze wordt thans afgerond uitgevoerd, zodat geen insnijding in de in de tray te plaatsen bol plaatsvindt.

10 begrepen dient te worden dat een dergelijke afgeronde rand 15 eveneens bij de eerder getoonde uitvoering toegepast kan worden terwijl de hierboven beschreven uitvoering met scherpe rand 12 in de onderhavige uitvoeringsvorm gebruikt kan worden.

Door degenen bekwaam in de stand der techniek zal begrepen worden dat de bovenstaande tray op een aantal voor de hand liggende wijzen veranderd kan worden.

15 Dergelijke wijzigingen worden geacht binnen het bereik van de onderhavige conclusies te liggen.

Conclusies

1. Gewas-tray, omvattende een kunststoflichaam met een aantal opnames (2) voor gewas (6) waarbij in de gebruikspositie elke opname aan de bovenzijde voorzien is van een inbrengopening voor het gewas en aan de onderzijde ten minste gedeeltelijk open is, met het kenmerk, dat de opening aan de onderzijde begrensd wordt door een in de richting van het uit de opname verwijderen van het gewas werkende snijrand (5).
2. Gewas-tray volgens conclusie 1, omvattende in elke opname klemmiddelen (4,14) voor het gewas.
3. Gewas-tray volgens conclusie 2, waarbij die klemmiddelen omvatten zich vanaf de inbrengopening naar de onderzijde van de opname in toenemende mate verder in die opname uitstrekkende schotten.
4. Gewas-tray volgens conclusie 3, waarbij die schotten in hoofdzaak loodrecht op de omtreksbegrenzing van die opname staan.
5. Gewas-tray volgens een van de conclusies 2-4, met het kenmerk, dat die klemmiddelen (4) voorzien zijn van scherpe snijranden (12).
6. Gewas-tray volgens een van de conclusies 2-5, omvattende ten minste drie klemmiddelen per opname.
7. Gewas-tray volgens een van de voorgaande conclusies, waarbij die klemmiddelen (14) verend ten opzichte van die opnames zijn aangebracht.
8. Gewas-tray volgens een van de voorgaande conclusies, waarbij die opnames zeshoekig uitgevoerd zijn.
9. Gewas-tray volgens conclusie 6-8, waarbij die klemmiddelen zich steeds vanaf een hoekpunt van die zeshoek uitstrekken.
10. Gewas-tray volgens een van de voorgaande conclusies, waarbij die begrenzingswanden van die opname een wanddikte kleiner dan 2,5 mm hebben.
11. Gewas-tray volgens een van de voorgaande conclusies, waarbij die opname uitgevoerd is voor het bevatten van een tulpenbol.
12. Teeltsysteem, omvattende een gewas-tray volgens een van de voorgaande conclusies, met een die gewas-tray opnemende houder (8) waarbij tussen de onderzijde van de tray en de bodem van de houder een vrije ruimte begrensd wordt.
- 13 Teeltsysteem volgens conclusie 12, waarbij die vrije ruimte voor ten minste een aantal van die opnames aan de onderzijde gemeenschappelijk is.

Uittreksel

Gewas-tray, bestaande uit een kunststoflichaam waarin een aantal opnames  
aangebracht is. Deze opnames zijn, in de gebruikspositie gezien, zowel aan de onderzijde  
5 als aan de bovenzijde open. Aan de bovenzijde wordt het gewas ingebracht en door de  
onderzijde kunnen zich wortels ontwikkelen die eventueel in contact gebracht kunnen  
worden met water. Om het gewas eenvoudig te kunnen verwijderen en vastgroeien van  
wortels te voorkomen wordt voorgesteld de begrenzing van de opening aan de onderzijde  
uit te voeren als een snijrand. Voor het klemmen van gewas zoals bollen kunnen  
10 klemmiddelen zoals zich in de opnames uitstrekkende schotten aanwezig zijn. Deze  
schotten en met name het deel dat de bollen raakt, kan scherp uitgevoerd zijn.



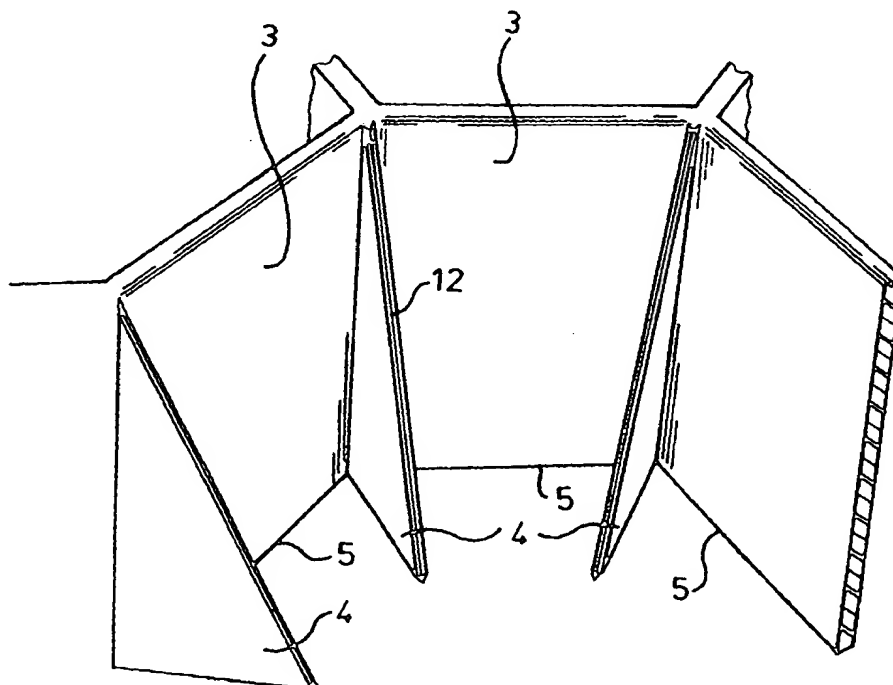
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(21) International Application Number: PCT/NL99/00405 (22) International Filing Date: 30 June 1999 (30.06.99) (30) Priority Data: 1009527                      30 June 1998 (30.06.98)                      NL (71) Applicant (for all designated States except US): V.O.F. GEBR. SMAK & ZN. [NL/NL]; Grutteweide 7, NL-1693 HR Wervershoof (NL). (72) Inventor; and (75) Inventor/Applicant (for US only): SMAK, Pieter, Wilhelmus, Johannes [NL/NL]; Grutteweide 7, NL-1693 HR Wervershoof (NL). (74) Agent: DE BRUIJN, Leendert, C.; Nederlandsch Octrooibureau, Scheveningseweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>In English translation (filed in Dutch).          Without international search report and to be republished upon receipt of that report.</i>	

(54) Title: PLANT TRAY AND CULTIVATION SYSTEM PROVIDED WITH SUCH A PLANT TRAY

## (57) Abstract

Plant tray consisting of a plastic body in which a number of accommodations have been made. Viewed in the use position, said accommodations are open both at the bottom and at the top. The plant is inserted at the top and roots, which optionally can be brought into contact with water, are able to develop through the bottom. So as to be able to remove the plant easily and to prevent the roots growing together into a solid mass, it is proposed to construct the boundary of the opening at the bottom in the form of a cutting edge. Clamping means, such as plates extending into the accommodations, can be provided for clamping plants such as bulbs. These plates, and in particular the part that comes into contact with the bulbs, can be made sharp.





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Plant tray and cultivation system provided with such a plant tray.

The present invention relates to a plant tray according to the preamble clause of Claim 1.

5 A plant tray of this type is disclosed in EP 0 758 524 A1. Tulip bulbs, but also other plants, are grown in such trays.

Netherlands Laid Open Application 9200641 describes a plant tray wherein the bottom of each of the accommodations is closed. Bulbs are placed in these accommodations through insertion openings made at the top and water is then supplied. This water collects at the  
10 bottom and root growth occurs here. Because this water does not circulate, slime formation takes place, which is disadvantageous for the further development of the bulb and, moreover, causes stench and rotting.

According to an alternative a tray is provided consisting of an essentially open container having a base surface from which a number of spikes or nails protrude onto which  
15 the bulbs concerned are pushed. There are thus no boundaries between the bulbs. Water is transported continuously or intermittently through a container of this type, as a result of which the problem of slime formation, stench and rotting is eliminated. The bulbs are arranged freely adjoining one another and it has been found that as a result of appreciable root formation and spread the bulbs can no longer be removed as individual items because the  
20 roots of adjacent bulbous plants become appreciably intertwined. This latter system is used in particular for long-term cultivation, for example ten weeks. The root development during such a long period can be appreciable. It is essential that the pins do not pierce through the root base because this causes irreparable damage to the plant. In practice it has been found that this does occur in particular cases.

25 According to other cultivation systems the plant is grown for a short time. Although the system of root formation described above is restricted to an appreciable extent, it is not completely eliminated. Furthermore, this means that the plant is stored dry for a longer period, as a result of which the quality could deteriorate. Moreover, the cultivation of such plants is seasonal and if the plant has to be moved again two weeks prior to harvest, this  
30 results in substantial peaks in the distribution of work, which is undesirable.

The construction described in EP 0 758 524 A1 comprises square accommodations, each of which is always provided with finger-like retaining elements half way up the boundary walls. Each tray is open at the bottom.

The aim of the present invention is to provide a plant tray with which the production of slime in the water in which the roots are standing is prevented, with which it is precluded that plants can no longer be removed because the roots of adjacent plants grow into one another and with which it is possible to carry out both a long cultivation (for example 10 weeks) and  
5 a short cultivation (for example 2 weeks).

Said aim is achieved with a plant tray as described above having the characterising features of Claim 1. Because the accommodations terminate in an opening at the bottom, a system for the supply and removal of water which is common to the various accommodations can be implemented beneath the tray, as a result of which the production of slime is no longer  
10 to be feared. Certainly in the case of long cultivation, there will be appreciable root formation and the roots of adjacent plants may grow into one another. Because of the presence of a cutting edge, when the bulb is withdrawn from the accommodations the soft root material is automatically cut free and no adjacent bulbous plants are removed at the same time.

Stable positioning of the bulbous plants in the accommodations can be promoted by  
15 fitting clamping means. A wide variety of types of clamping means are proposed in the prior art. According to an advantageous embodiment of the invention, said clamping means, however, consist of plates which preferably extend perpendicularly to the periphery of the accommodations and delimit a tapered opening for such a bulbous plant. That is to say, the bulbous plant can be pushed firmly into the clamping means. No damage to the bulbs during  
20 further growth has been observed, such as has been found in the case of systems with which the roots are skewered on pins and the like. Fixing of the bulbs is facilitated if such plates are provided with a sharp cutting edge. It is true that there is local cutting into the coat of the bulb as a result, but in general no damage to the base of the bulb takes place. The consequences of damage to the coat are less than those of damage to the base of the bulb. In cases where  
25 damage does have an adverse effect, the edges of the plates can have been chamfered. Moreover, it is possible to fix the plates only at the top or bottom of the tray, as a result of which the plates are able to move resiliently to and fro. Moreover, means can be fitted to determine the depth at which the bulbs have to be introduced over the plates, so that all bulbs are at the same height.

30 According to a further advantageous embodiment of the invention, the accommodations are made hexagonal and arranged in a honeycomb pattern. It has been found that optimum utilisation of the surface area of the tray is obtained in this way. With an embodiment of this type the clamping plates preferably extend from one or more of the

corners of the hexagons.

The wall thickness of the trays and more particularly close to the cutting edge is preferably between 0.5 and 2.5 mm. In this way adequate strength is combined with the ability to cut the relatively soft root material. The actual cutting edge of the plates is preferably made thinner and is less than 2.5 mm.

As indicated above, the invention does not relate exclusively to tulip bulbs, but other plants, such as hyacinths and narcissi, can also be cultivated using the invention.

The plant tray described above is preferably used in combination with a cultivation system with which it is ensured that the roots of the bulbs come into contact with water. This means that a water level must be chosen as a function of the depth to which the bulbs are pressed into the trays. Preferably, the various features are implemented in such a way that the tray is placed in a container into which water is introduced, which water circulates continuously or periodically. Optionally, an ebb/tide system can be used.

The invention will be explained in more detail below with reference to an illustrative embodiment shown in the drawing. In the drawing:

Fig. 1 shows a plan view of a tray according to the invention;

Fig. 2 shows a partially exposed side view of a detail of the tray according to Fig. 1; and

Fig. 3 shows a cross-section along the line 3 - 3 in Fig.1 in combination with a cultivation system and

Fig. 4 shows, diagrammatically, in cross-section, an alternative method for clamping the bulbous plant.

Fig. 1 shows a plan view of a tray for cultivating tulip bulbs. This tray is indicated by 1. The dimensions of this tray are approximately 60 x 40 cm, but it must be understood that such dimensions are not of essential importance for the inventive concept. 90 - 150 accommodations for holding tulip bulbs have, for example, been made in the tray. This number will be different for other plants.

The accommodations are indicated by reference numeral 2 and are hexagonal, the walls being indicated by 3. One accommodation is shown in detail in Fig. 2 and it can be seen that said accommodation is also provided with clamping plates 4, which are constructed such that they slope downwards at an angle, as well as with peripheral walls 3. The bottom edges of the accommodations 2 are indicated by 5. The clamping plates 4 are provided with cutting edges 12 and the edges have been made relatively sharp.

Fig. 3 shows a combination of trays 1 with an ebb/tide system. The latter consists of a liquid-tight container provided with a water feed 10 and water discharge 11, the water level at the particular point in time being indicated by 9. The tray and/or the containers are provided with spacers. The plant is indicated by 6 and it can be seen from the drawing that the roots thereof are in the water 9. By this means optimum growth of the plant can be achieved. Slime formation and rotting is prevented by regular or continuous circulation of water 9. Crop protection agents, fertilisers and the like can optionally be added to the water.

As can be seen from Fig. 3, the roots of adjacent plants 6 will become intertwined, certainly if relatively long cultivation over a number of weeks is used. Under normal circumstances this would impede the removal of the plant 6 from the accommodation 2 concerned. Because of the presence of cutting edges 5, however, the relatively soft root tissue can be simply cut through on exerting a pull on plants 6. Because the root tissue is relatively soft, the requirements in respect of the "sharpness" of cutting edge 5 are not too stringent and such a cutting edge can easily be produced directly by injection moulding with conventional chamfering.

The plant, and more particularly the bulb thereof, is clamped between the clamping plates or clamping walls 4. By this means, on the one hand, severe damage is prevented and, on the other hand, adequate fixation is ensured, so that transport and further handling of the tray are possible. The cutting edge indicated by 12 is, in particular, made sharp so that simple clamping is achieved and possible damage is restricted to a very small region. It is possible for the clamping plates to be of stepped construction or constructed in another way in order to provide a height stop for the bulbs.

A variant of the tray according to the invention is shown in Fig. 4. The components which correspond to those in Figs 1 - 3 have been provided with the same reference numerals. The clamping plates in this embodiment have been indicated by 14 and consist of strips of material fixed only at the top of walls 3. By means of this method of fixing, the plant can be resiliently clamped. In such a case it is not necessary for the edge indicated by 15 to be sharp. This edge is now made chamfered, so that no cutting into the bulb to be placed in the tray takes place.

It must be understood that such a chamfered edge 15 can also be used with the embodiment shown previously, whilst the construction described above with sharp edge 12 can be used in the embodiment under consideration.

Those skilled in the art will understand that the above tray can be modified in a number

of obvious ways. Such modifications are considered to fall within the scope of the present claims.

Claims

1. Plant tray, comprising a plastic body having a number of accommodations (2) for plants (6), wherein, in the use position, each accommodation is provided at the top with an insertion opening for the plant and is at least partially open at the bottom, characterised in that the opening at the bottom is delimited by a cutting edge (5) acting in the direction in which the plant is removed from the accommodation.
2. Plant tray according to Claim 1, comprising clamping means (4, 14) for the plant in each accommodation.
3. Plant tray according to Claim 2, wherein said clamping means comprise plates extending increasingly further into said accommodation from the insertion opening to the bottom of the accommodation.
4. Plant tray according to Claim 3, wherein said plates are essentially perpendicular to the peripheral boundary of said accommodation.
5. Plant tray according to one of Claims 2 - 4, characterised in that said clamping means (4) are provided with sharp cutting edges (12).
6. Plant tray according to one of Claims 2 - 5, comprising at least three clamping means per accommodation.
7. Plant tray according to one of the preceding claims, wherein said clamping means (14) are fitted such that they are resilient with respect to said accommodations.
8. Plant tray according to one of the preceding claims, wherein said accommodations are made hexagonal.
9. Plant tray according to Claims 6 - 8, wherein said clamping means always extend from a corner point of said hexagon.
10. Plant tray according to one of the preceding claims, wherein said boundary walls of said accommodation have a wall thickness of less than 2.5 mm.
11. Plant tray according to one of the preceding claims, wherein said accommodation is designed to take a tulip bulb.
12. Cultivation system comprising a plant tray according to one of the preceding claims, having a container (8) which takes said plant tray, wherein free space is delimited between the bottom of the tray and the base of the container.
13. Cultivation system, according to Claim 12, wherein said free space is common to at least a number of said accommodations at the bottom.

fig-1

1/2

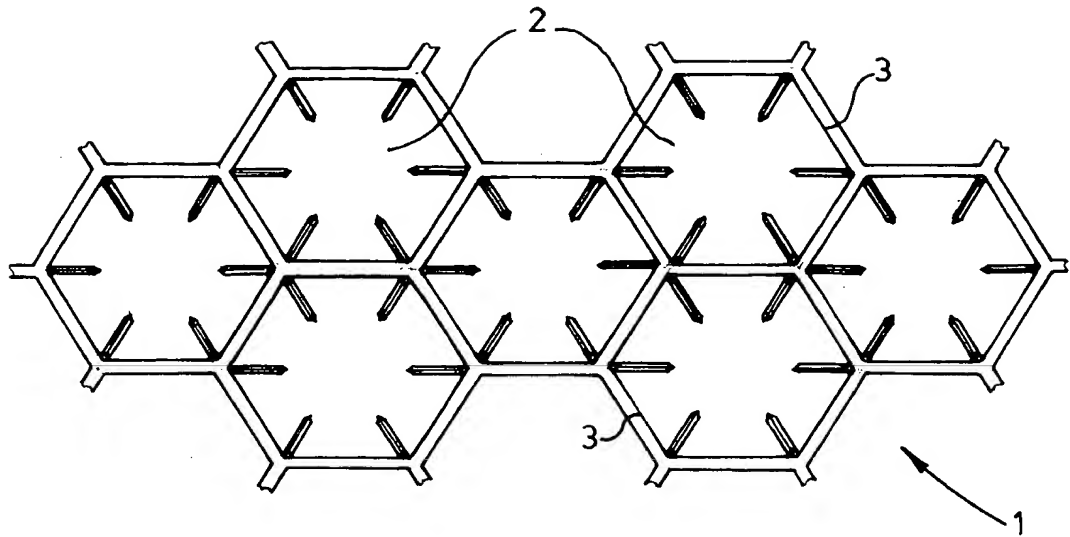
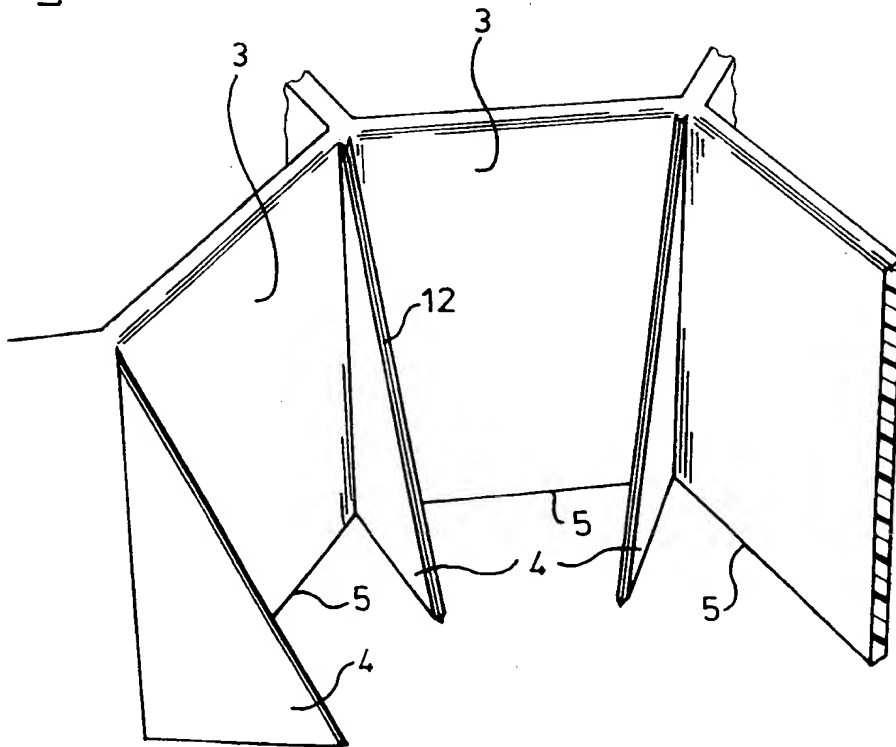


fig-2





2/2  
fig - 3

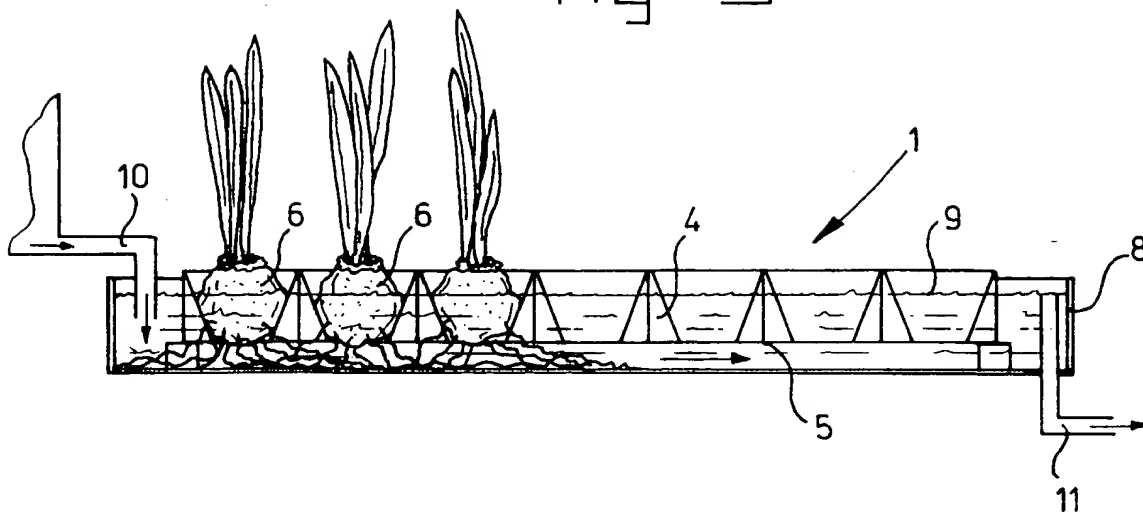
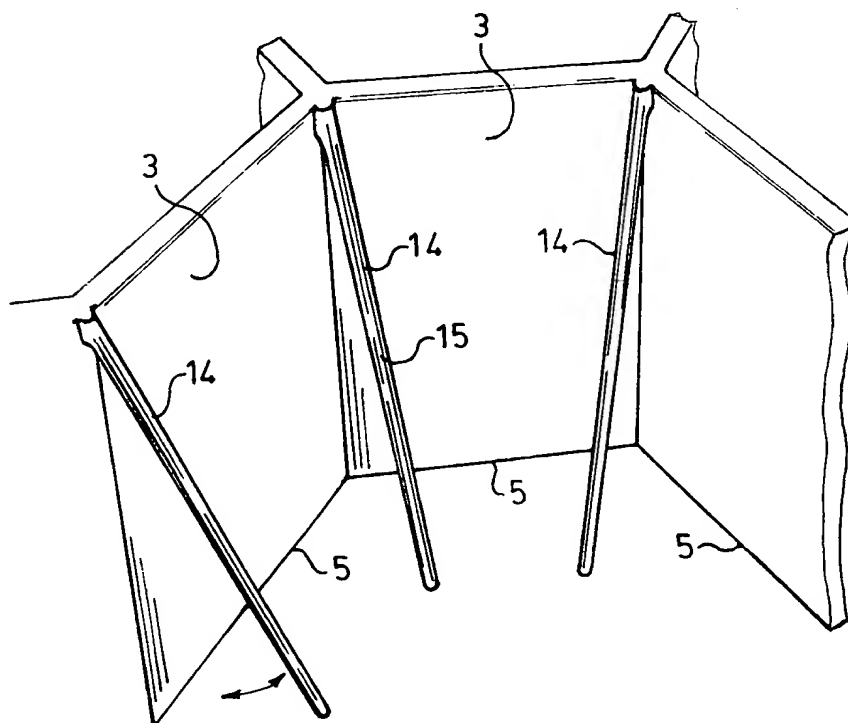


fig - 4





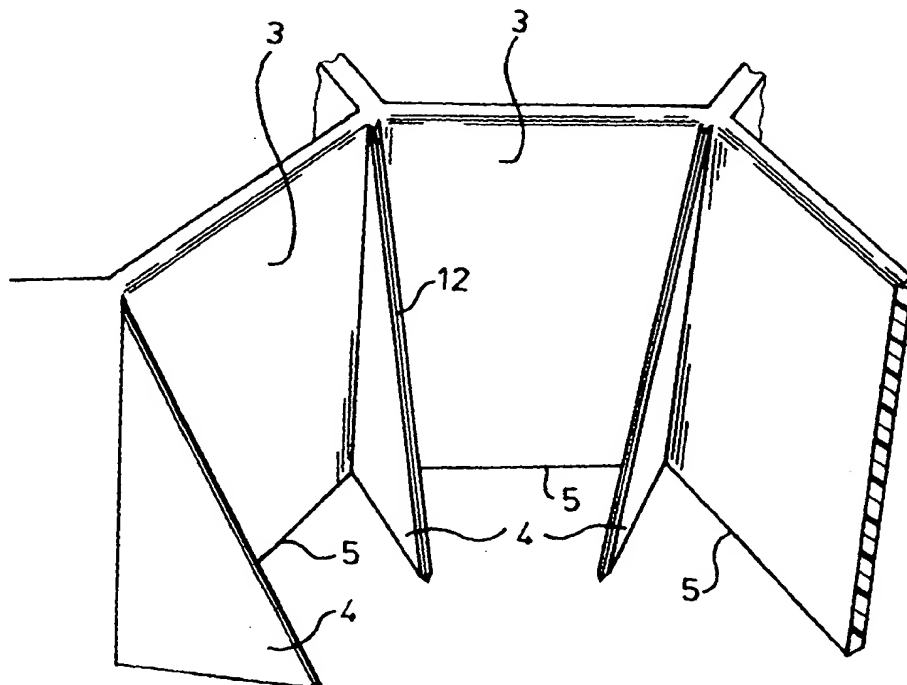
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> : <b>A01G 9/10</b>		<b>A3</b>	(11) International Publication Number: <b>WO 00/00014</b>
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(21) International Application Number: PCT/NL99/00405 (22) International Filing Date: 30 June 1999 (30.06.99) (30) Priority Data: 1009527 30 June 1998 (30.06.98) NL (71) Applicant (for all designated States except US): V.O.F. GEBR. SMAK & ZN. [NL/NL]; Gruteweide 7, NL-1693 HR Wervershoof (NL). (72) Inventor; and (75) Inventor/Applicant (for US only): SMAK, Pieter, Wilhelmus, Johannes [NL/NL]; Gruteweide 7, NL-1693 HR Wervershoof (NL). (74) Agent: DE BRUIJN, Leendert, C.; Nederlandsch Octrooibureau, Scheveningseweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. In English translation (filed in Dutch). (88) Date of publication of the international search report: 24 August 2000 (24.08.00)	

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 99/00405

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A01G9/10

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A01G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 758 524 A (HOUNG CHONG LOUNG ;WANG CHING (TW)) 19 February 1997 (1997-02-19) cited in the application column 3, line 33 - line 55; figures 3,4 ---	1-4,6,11
A	FR 2 620 899 A (ALPES PROVENCE GAEC PEPINIERES) 31 March 1989 (1989-03-31) the whole document ---	1,2,6,11
A	DE 92 09 299 U (HERKUPLAST KUBERN GMBH) 17 September 1992 (1992-09-17) figures ---	1,2,6,11
A	EP 0 242 498 A (PETROVIC BRANISLAV) 28 October 1987 (1987-10-28) claim; figures ---	1,2,6,11
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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Date of the actual completion of the international search

21 January 2000

Date of mailing of the international search report

27/01/2000

Name and mailing address of the ISA

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# INTERNATIONAL SEARCH REPORT

Int. l. Application No

PCT/NL 99/00405

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 195 653 A (WILLIAMES HI TECH INT) 24 September 1986 (1986-09-24) figures	8
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information on patent family members

International Application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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